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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/495,597	02/01/2000	Thumpudi Naveen		5071

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EXAMINER

CARTER, AARON W

ART UNIT

PAPER NUMBER

2625

DATE MAILED: 01/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/495,597	NAVEEN ET AL. <i>g</i>
Examiner	Art Unit	
Aaron W Carter	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 01 February 2000.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-6 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 01 February 2000 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

 If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. _____.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4) Interview Summary (PTO-413) Paper No(s) _____.

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,192,150 to Leow et al. (“Leow”).

As to claim 1, Leow discloses a method of generating a normalized bitmap of the shape of a visual object in an image (Fig. 2, element 100, “Feature Extractor” and column 3, lines 45-49) comprising the steps of:

segmenting the image to generate a segmentation map of visual objects (Fig. 2, element 140, and column 4, lines 13-16);

identifying samples from the segmentation map belonging to a visual object of interest (column 3, lines 28-33, wherein “homogeneous texture patterns” corresponds to a visual object of interest);

identifying the largest connected blob to form an un-normalized bitmap (column 3, lines 50-59, “extract texture features at a plurality of spatial frequencies and orientations”); and normalizing the un-normalized bitmap to form the normalized bitmap representation (column 4, lines 1-12).

As to claim 2, Leow discloses the method as recited in claim 1 further comprising the step of searching a database of images each image having associated visual objects with normalized bitmap representations, in response to a query specifying a desired normalized bitmap representation to identify a plurality of visual objects having normalized bitmap representations that closely match the desired normalized bitmap representation (column 5, lines 13-16 and lines 28-30).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leow as applied to claim 1 above, and further in view of U.S. Patent 5,774,129 to Poggio et al. ("Poggio").

As to claim 3, Leow discloses a normalization technique, but does not explicitly disclose that the normalization steps as set forth by the applicant. However, Poggio discloses a normalization process that comprises:

Estimating a mean and covariance for each valid sample in the un-normalized bitmap (column 11, lines 57-58);

Computing a principal direction for the un-normalized bitmap based upon the mean and covariance as eigenvectors of a covariance matrix (column 10, lines 52-58); and

Back projecting the un-normalized bitmap as a function of the mean and eigenvectors to normalize (column 12, lines 1-7) the un-normalized bitmap for translation, rotation, and scale (column 11, lines 50-51) so that after normalization the normalized bitmap representation has a standard height and is oriented such that the principle direction is along a vertical direction (column 11, lines 61-65).

Therefore it would have been obvious to one of skill in the art to combine the inventions of Leow and Poggio. This combination would give the invention the advantage of normalizing the segmented images shape and texture for use in Leow's image query and retrieval method, which would decreasing the time required for matching (column 5, lines 13-16).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leow as applied to claim 1 above, and further in view of U.S. Patent 6,002,794 to Bonneau et al. ("Bonneau").

As to claim 4, Leow discloses the method as recited in claim 2 wherein the searching step comprises the steps of: providing a query bitmap seeking similarly shaped visual objects from the database; normalizing the query bitmap; for each normalized bitmap representation in the database compute a mismatch value with the normalized query bitmap; and identifying the visual objects having normalized bitmap representations with low mismatch values. Leow does not explicitly disclose the step of obtaining various mirror versions of the normalized query bitmap. However, Bonneau teaches us that obtaining various mirrored versions of an image is beneficial in that it creates more images for comparing another image with. Therefore it would have been obvious to one of ordinary skill in the art to combine the invention of Leow with the teachings of

Bonneau. This gives the invention the advantage of providing more images for comparison, which will increase the chances of finding the correct image during a query.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leow as applied to claim 2 above, and further in view of U.S. Patent 6,415,282 to Mukherjea et al. (“Mukherjea”).

As to claim 5, Leow discloses the method as recited in claim 2 wherein the searching step comprises the steps of: providing a query bitmap to find visual objects in the database that are similar; normalizing the query bitmap; obtaining an absolute difference between the normalized bitmap representation and the query; and identifying the visual objects where the absolute difference has low values (column 5, lines 13-16). Leow does not explicitly disclose that the difference between the normalized bitmap representation and the query bitmap is based on their aspect ratios. However, Mukherjea teaches us that comparing the aspect ratio of a query image with the aspect ratio of a template image is a good way of identifying a query image (column 8, lines 14-29). Therefore it would have been obvious to one of ordinary skill in the art to combine the inventions of Leow and Mukherja. This would give the invention the advantage of comparing aspect ratio of images for use in image identification.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leow as applied to claim 1 above, and further in view of U.S. Patent 6,181,817 to Zabith et al. (“Zabith”).

As to claim 6, Leow discloses the method as recited in claim 2 wherein the searching step comprises the steps of: providing a query bitmap to find visual objects in the database that are

similar; obtaining an absolute difference between the normalized bitmap representation and the query; and identifying the visual objects where the absolute difference has low values (column 5, lines 13-16). Leow does not explicitly disclose that the difference between the normalized bitmap representation and the query bitmap is based on their densities. However, Zabith teaches a method of comparing data objects based on their densities (column 3, lines 40-42 and column 4, lines 2-4). Therefore it would have been obvious to one of ordinary skill in the art to combine the inventions of Leow and Zabith. This gives the searching step of Leow the advantage of comparing image densities, which will increase the probability of correctly matching image segments (column 3, lines 45-47).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,751,286 to Barber et al. discloses IBM's QBIC.

U.S. Patent 6,088,483 to Nakano et al. discloses a pattern matching method that uses a normalization factor.

U.S. Patent 5,852,823 to De Bonet discloses the Microsoft image classification and retrieval method.

U.S. Patent 5,784,501 to Tanaka discloses image comparison in which character are rotated and compared, Figure 4.

Contact Information

Art Unit: 2625

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron W. Carter whose telephone number is 703.306.4060. The examiner can normally be reached by telephone between 8am - 4:30pm (Mon. - Fri.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 703.308.5246. The fax phone number for the organization where the application or proceeding is assigned is 703.872.9314 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.306.0377.

Aaron W. Carter
Examiner
Art Unit 2625

AWC
awc

January 22, 2003



BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
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